

# 2SC3799, 2SC3799A

**Silicon NPN triple diffusion planar type**  
For high breakdown voltage high-speed switching

## ■ Features

- High-speed switching
- High collector to base voltage  $V_{CBO}$
- Low collector to emitter saturation voltage  $V_{CE(sat)}$
- Full-pack package which can be installed to the heat sink with one screw

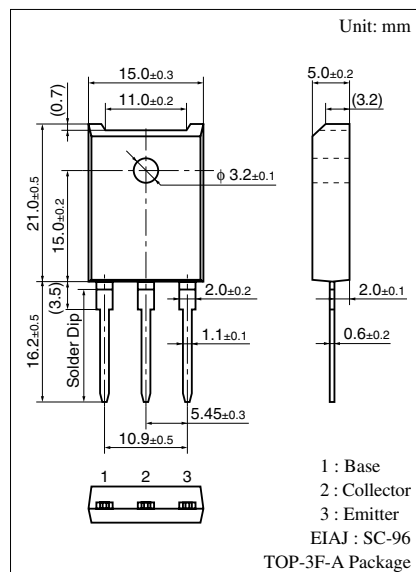
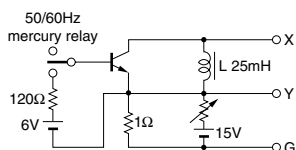
## ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

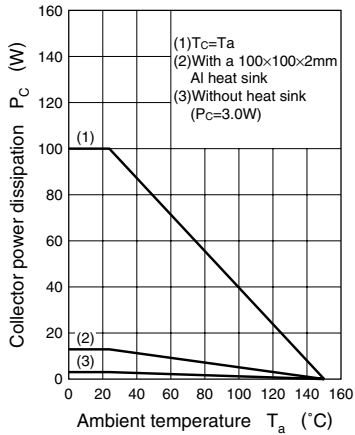
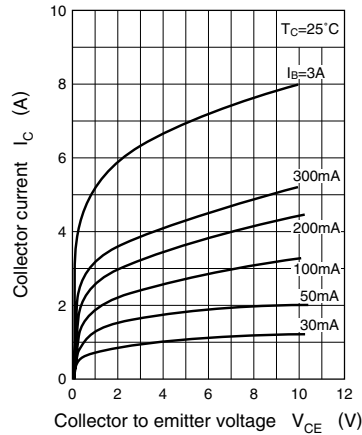
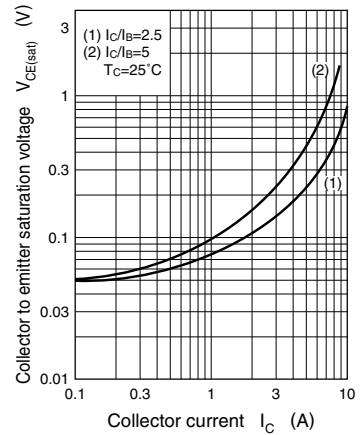
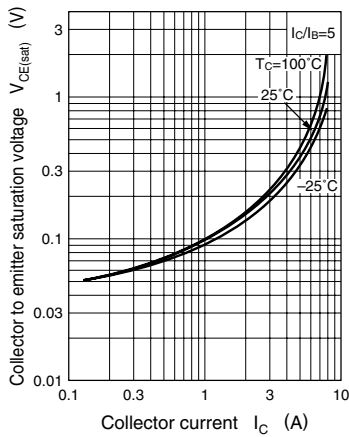
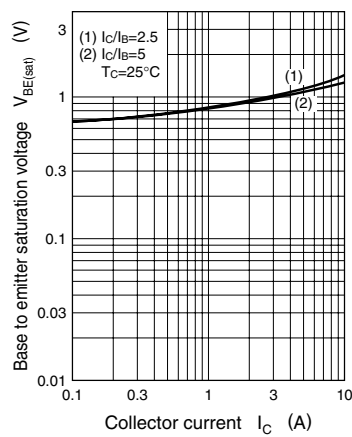
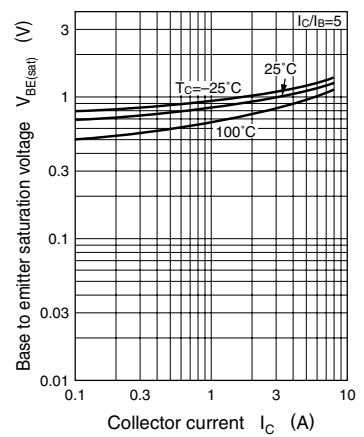
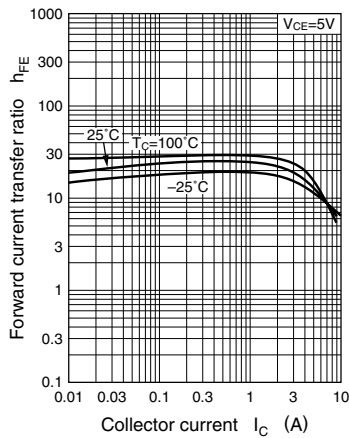
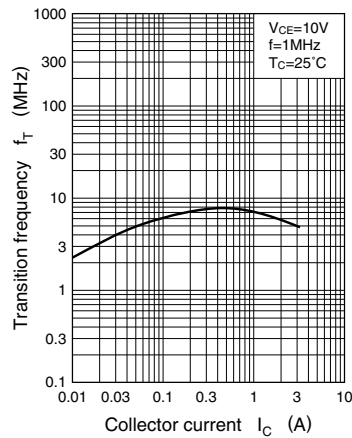
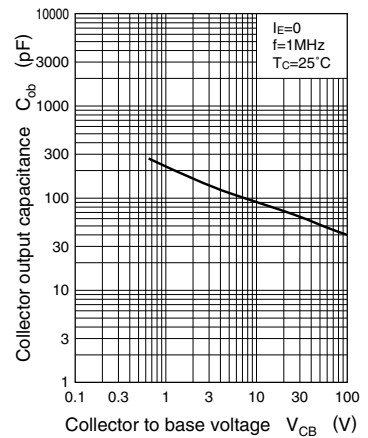
| Parameter                    |                            | Symbol           | Rating      | Unit               |
|------------------------------|----------------------------|------------------|-------------|--------------------|
| Collector to base voltage    | 2SC3799                    | $V_{CBO}$        | 800         | V                  |
|                              | 2SC3799A                   |                  | 900         |                    |
| Collector to emitter voltage | 2SC3799                    | $V_{CES}$        | 800         | V                  |
|                              | 2SC3799A                   |                  | 900         |                    |
| Collector to emitter voltage |                            | $V_{CEO}$        | 500         | V                  |
| Emitter to base voltage      |                            | $V_{EBO}$        | 8           | V                  |
| Peak collector current       |                            | $I_{CP}$         | 15          | A                  |
| Collector current            |                            | $I_C$            | 7           | A                  |
| Base current                 |                            | $I_B$            | 4           | A                  |
| Collector power dissipation  | $T_C = 25^{\circ}\text{C}$ | $P_C$            | 100         | W                  |
|                              | $T_a = 25^{\circ}\text{C}$ |                  | 3           |                    |
| Junction temperature         |                            | $T_j$            | 150         | $^{\circ}\text{C}$ |
| Storage temperature          |                            | $T_{\text{stg}}$ | -55 to +150 | $^{\circ}\text{C}$ |

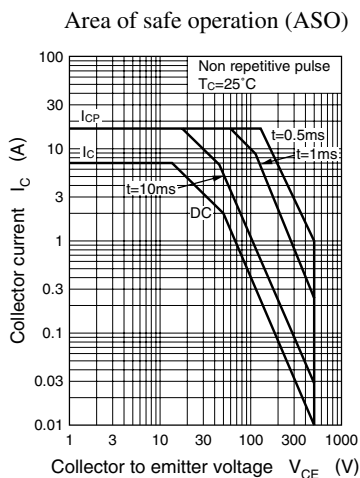
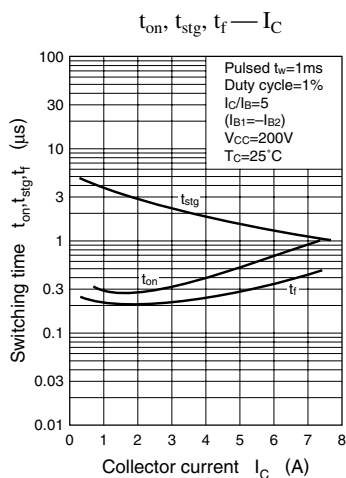
## ■ Electrical Characteristics $T_C = 25^\circ\text{C}$

| Parameter                               |          | Symbol                | Conditions                                                                                      | Min | Typ | Max | Unit |
|-----------------------------------------|----------|-----------------------|-------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| Collector cutoff current                | 2SC3799  | I <sub>CBO</sub>      | V <sub>CB</sub> = 800 V, I <sub>E</sub> = 0                                                     |     |     | 100 | μA   |
|                                         | 2SC3799A |                       | V <sub>CB</sub> = 900 V, I <sub>E</sub> = 0                                                     |     |     | 100 |      |
| Emitter cutoff current                  |          | I <sub>EBO</sub>      | V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0                                                       |     |     | 100 | μA   |
| Collector to emitter voltage *          |          | V <sub>CEO(sus)</sub> | I <sub>C</sub> = 0.2 A, L = 25 mH                                                               | 500 |     |     | V    |
| Forward current transfer ratio          |          | h <sub>FE1</sub>      | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 0.1 A                                                   | 15  |     |     |      |
|                                         |          | h <sub>FE2</sub>      | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 5 A                                                     | 8   |     |     |      |
| Collector to emitter saturation voltage |          | V <sub>CE(sat)</sub>  | I <sub>C</sub> = 5 A, I <sub>B</sub> = 1 A                                                      |     |     | 1   | V    |
| Base to emitter saturation voltage      |          | V <sub>BE(sat)</sub>  | I <sub>C</sub> = 5 A, I <sub>B</sub> = 1 A                                                      |     |     | 1.5 | V    |
| Transition frequency                    |          | f <sub>T</sub>        | V <sub>CE</sub> = 10 V, I <sub>C</sub> = 0.5 A, f = 1 MHz                                       |     | 8   |     | MHz  |
| Turn-on time                            | 2SC3799  | t <sub>on</sub>       | I <sub>C</sub> = 5 A, I <sub>B1</sub> = 1 A, I <sub>B2</sub> = −1 A,<br>V <sub>CC</sub> = 200 V |     |     | 1   | μs   |
|                                         | 2SC3799A |                       |                                                                                                 |     |     | 1.2 |      |
| Storage time                            |          | t <sub>stg</sub>      |                                                                                                 |     |     | 3   | μs   |
| Fall time                               | 2SC3799  | t <sub>f</sub>        |                                                                                                 |     |     | 1   | μs   |
|                                         | 2SC3799A |                       |                                                                                                 |     |     | 1.2 |      |

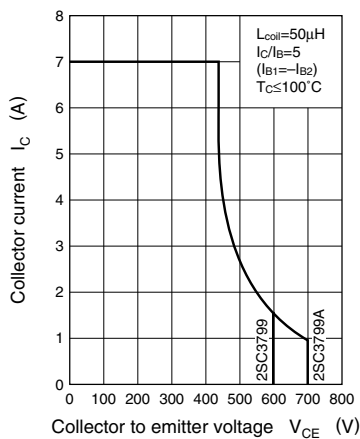
Note) \*:  $V_{CEO(sus)}$  Test circuit



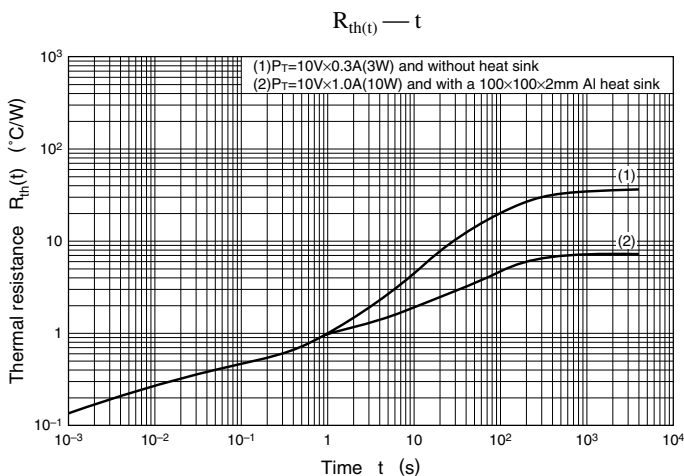
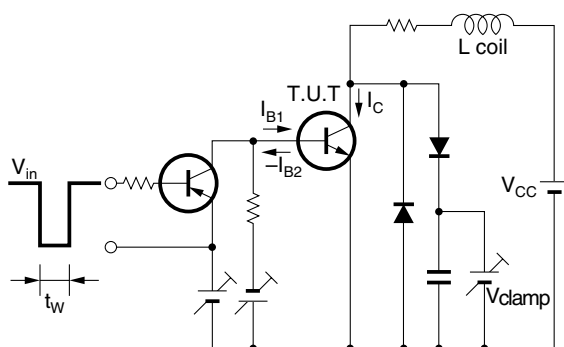
$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $f_T - I_C$  $C_{ob} - V_{CB}$ 



Area of safe operation, reverse bias ASO



Reverse bias ASO measuring circuit



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